國立虎尾科技大學

Effect of Phosphates on Synthesis of Calcium phosphate Powders through Microwave

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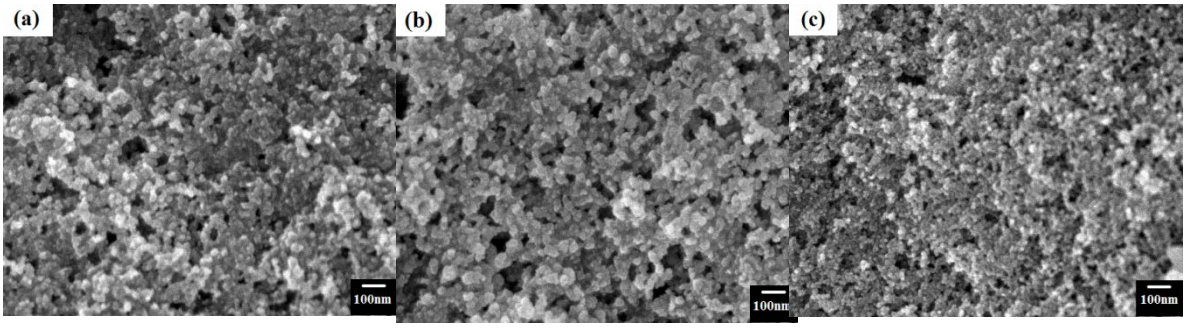
技術內容

Calcium phosphate is the most commonly used of the ceramic material as a bone substitute, it has excellent biocompatibility and biological activity. In this work, calcium nitrate tetrahydrate solution was used for calcium ion source and phosphate solution was used for phosphate ion source to synthesize calcium phosphate powder, volume molar ratio of Ca/P was fixed to 1.67, ammonia was used to adjust pH=11, the reaction solution was heated quickly and evenly by microwave method. Phosphates used in the work are sodium tripolyphosphate ($Na_5P_3O_{10}$), potassium tripolyphosphate ($K_5P_3O_{10}$), potassium pyrophosphate ($K_4P_2O_7$). Product powders were calcined at 350 ℃, 550 ℃, 750 ℃ for one hour. The compositions, powder morphology and particle size of the products were analyzed by XRD and FE-SEM. The results showed: The spherical calcium phosphate powder can be synthesized by using calcium nitrate tetrahydrate and the aforementioned three kinds of phosphates, the powder has a size range of 20 to 40nm.

技術圖片



FE-SEM micrographs of adding different phosphates (a) $Na_5P_3O_{10}$ (b) $K_5P_3O_{10}$ (c) $K_4P_2O_7$

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